INTRAOPERATIVE ELECTRON RADIATION THERAPY (IOERT) IN THE MANAGEMENT OF PATIENTS WITH LOCAL RECURRENT OR ADVANCED GINECOLOGIC MALIGNANCIES: A SIX CASE REVIEW

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Introduction

Gynecologic malignancies are the 4º most common cancer in women with a total incidence of 9.4%. [1] After a curative strategy around 30 % will experience local cancer recurrence often with a dismal prognosis and very limited curative treatment options. [2] Some of this recurrences may be suitable for a salvation surgery. In these patients, the addition of IORT to surgical resection can increase the probability of local control. [3] IORT refers to the delivery of a single large dose of radiation to a limited volume of tissue during a surgical procedure. It is usually associated to external beam radiotherapy, before or after surgery. After gross total resection of marginally respectable lesions, IORT has the potential to sterilize remaining tumor nests. During IORT, overlying normal tissue (such as bowel or other viscera) can be manually displaced from the region at risk increasing the radiation dose with very limited or no increase of toxicity. There is scarce data on efficacy and toxicity of these combined treatment approach.

Objectives

Report our experience in locally recurrent or advanced pelvic gynecologic malignancies who received intraoperative electron beam radiotherapy (IOERT) after chemoradiation.

Methods

From April 2012 to October 2018, 6 patients with recurrent cervical cancer (n=3), vaginal (n=2) and endometrial (n=1) were treated with IOERT. Previously unirradiated (n=1) patients received preoperative chemoradiation between 45-50.4Gy with cisplatin. Those who had already been irradiated (n=5) received 30Gy to pelvis with concomitant cisplatin before surgery. IOERT dose ranged between 10Gy–15Gy. All data were collected retrospectively and in accordance with institutional ethical policies. The Overall Survival (OS) and the disease free progression (DSP) were calculated by the Kaplan-Meier method.

Results

Case	Age	ECOG	Cancer	Histology	Pelvic Recurrence	Time to 1º recurrence (months)	Surgery	EBRT	IOERT	Margins	OS (months)	Recurrence
1	52	0	Endometrial	ADC	Central	123,2	Posterior Exenteration	50,4Gy	12.5Gy	R0	43,4	No
2	50	0	Vaginal	SCQ	Lateral	8,5	Posterior Exenteration	30Gy	10Gy	R0	85,3	No
3	44	0	Cervical	ADC	Central	38,4	Total Exenteration	30Gy	12.5Gy	R0	33,3	No
4	51	0	Vaginal	SCQ	Lateral	6,7	Total Exenteration	30Gy	12.5Gy	R0	59,8	No
5	56	1	Cervical	ADC	Lateral	24,2	Posterior Exenteration	30Gy	15Gy	R1	6,7	No
6	50	0	Cervical	ADC	Lateral	17,4	Total Exenteration	30Gy	12.5Gy	R0	38,4	No

ADC: Adenocarcinoma; SCQ: Squamous

Conclusion

Radical resection combined with IOERT seems to be a valid curative treatment option for patients who have failed prior surgery and/or definitive radiation. The patient selection is crucial and in addition to consideration of disease related morbidity, other factors shall be considered including the time interval from initial therapy to recurrence and whether the patient is able to receive perioperative chemoradiation and pelvic exenteration in addition to IOERT.

	n=6
Energy	
6MV	1 (16,6%)
9MV	5 (83,3%)
Aplicator Size Range	6 -10cm
Mean IORT duration	17,8 min (range,11-44)
Bisel Angle	
45º	5 (83,3%)
30º	1 (16,6%)
Mean hospitalization	23,2 days (range, 10-51)
IORT related toxicities	None reported

Follow-up	
Mean follow-up	55 months
3-year Overall Survival	100%
3-year Disease Free Progression	100%
Mean time between diagnosis and recurrence	3.6 years

¹American Cancer Society, Cancer Facts & Figs. 2014,American Cancer Society,Atlanta, 2014.

²National Comprehensive Cancer Network (NCCN), Clinical Practice Guidelines in Oncology, Uterine and Cervical Cancer, Version 2.2015

³ L.L. Gunderson (Ed.), Intraoperative Irradiation: Techniques and Results, Humana Press, New York, NY 2011,p. 28.

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